KPMG Consulting has been asked to provide an assessment of the *Indiana & Ohio CLECs Statistics Statement of Position* (distributed to the Ohio and Indiana Collaborative members) and the *Petition for Rehearing or Reopening* of the Wisconsin statistical order (collectively the "*OH/IN/WI Request*"). This assessment is presented below.

The *OH/IN/WI Request*:

1. Proposes commission-mandated implementation of suggestions that were not agreed upon during the collaborative development process;

2. Does not reflect KPMG Consulting's view of certain elements of Appendix C and the Statistical White Paper in Wisconsin and the current proposed Appendix C in Ohio and Indiana;

3. Significantly alters the baseline project schedule;

4. Does not produce any significant improvement in the Evaluations.

The *OH/IN/WI Request* proposes commission-mandated implementation of suggestions that were not agreed upon during the collaborative development process.

The respective state regulatory commission staffs, Ameritech and the CLECs have collaborated for the past several months to develop and refine the statistical approach described in the proposed Appendix C distributed to Collaborative members in Ohio (March 1, 2001) and Indiana (March 2, 2001), respectively, and Appendix C and the Statistical White Paper in Wisconsin[1]. KPMG Consulting participated in these collaborative sessions consistent with its role as an independent third-party test manager.

During the development of Appendix C in these states, Collaborative members discussed suggestions of dual hypothesis testing, exchanging the null and alternative hypotheses and the use of full sample sizes at all disaggregations or for select CLEC-specified measures before the current version of Appendix C was produced. The current version of Appendix C was refined to account for Collaborative participants' concerns with some elements of the statistical approach described in the original version of Appendix C. Items were addressed through updates to the original proposed version of Appendix C and by development of the Statistical White Paper in Wisconsin, which has been integrated into the current proposed Appendix C in Ohio and Indiana. Essentially, the *OH/IN/WI Request* appears to abandon Collaborative-driven enhancements to the statistical methodology and advocates that state regulatory

[1] The proposed Appendix C in Ohio and Indiana is a combination of the accepted Wisconsin Appendix C and the Statistical White Paper. In total, each of these documents or sets of documents describe exactly the same statistical approach. For the sake of simplicity, references to the accepted Appendix C in Wisconsin throughout the remainder of this assessment implicitly acknowledge the inclusion of the Wisconsin Statistical White Paper as part of Appendix C.

commissions order the implementation of suggestions that were not acceptable to all Collaborative parties.

The *OH/IN/WI Request* does not reflect KPMG Consulting's view of certain elements of Appendix C.

KPMG Consulting disagrees with the following points in the *OH/IN/WI Request*:

1) "The test's statistical methodology employs incorrect hypotheses;"

2) "The statistical methodology does not balance error potential."

Correctness of the Hypotheses. Appendix C relies on a Null Hypothesis of parity for metrics that involve parity because parity is the only clear and easily definable hypothesis. Additionally, in cases of identical, or supposedly identical, processes (such as those involving parity measures), the logical methodology is to attempt to disprove the Null Hypothesis of parity. As a result, these Evaluations are designed to focus on testing for credible evidence of the absence of parity, rather than to "prove" the existence of parity. Hence, the *OH/IN/WI Request* incorrectly interprets the application of the scientific method in this case.

Balancing of Error Potential. The *OH/IN/WI Request* asserts an imbalance between the error rates set for Type I (false failure) and Type II (false pass). The *OH/IN/WI Request* claims the concept of a Type II error rate of 50% for disaggregations is "no more scientific than a coin flip." This assertion is tantamount to claiming that all statistical tests are unscientific. Despite implicit claims to the contrary in the *OH/IN/WI Request*, every standard statistical test of means has some level of disparity where the error rate is 50%.

Appendix C sets sample sizes to equate Type I and Type II error rates for each metric at the aggregated level, for a level of disparity agreed upon at one point by Collaborative participants. The Type I and Type II error levels are set at 5% for specific "aggregated" metrics in these states. The Type II error rate is set at 50% for this same level of disparity for "disaggregated" metrics. Appendix C details the reasons for the error rates that correspond to the particular level of disparity specified.

Despite the rationale provided in Appendix C, Type I and II error levels continue to be the subject of great misunderstanding in this instance. Logically, if product disaggregations exist within an aggregated metric, error rates for these disaggregations need to be higher than for the aggregated metric itself because the sample size is necessarily smaller. Type I and Type II errors could be equalized for all disaggregated metrics. However, such activity would result in a much smaller Type II error rate than Type I error rate for aggregated metrics. Furthermore, this suggestion was raised and rejected earlier in the collaborative process because it significantly increases the size of the test beds, and therefore significantly increases the baseline project schedules.

The *OH/IN/WI Request* significantly alters the baseline project schedule.

KPMG Consulting's baseline project schedules for Wisconsin, Ohio and Indiana (currently under development) are predicated on the current version of Appendix C. Exchanging the null and alternative hypotheses (as they are currently proposed) or utilizing dual hypotheses will necessitate a substantial outward movement of the baseline project schedules estimated at four to six months.

A null hypothesis that relies on the principle of equality (which is the case with the current version of Appendix C) is elegantly simple and robust. Equality is, after all, equality. There is no reason to establish the "level" at which equality exists for each test. Thus, Appendix C, as accepted in Wisconsin and as proposed in Ohio and Indiana, does not require any additional development before testing can begin.

Exchanging the null and alternative hypotheses or engaging in dual hypothesis testing is deceptively complicated. A null hypothesis predicated on disparity is much more problematic because the level of disparity must be established for each and every test. This determination is necessary because the effect of disparity, even measured in standard units of variability (such as standard deviation), is likely to differ by product. Additionally, Commission and Collaborative guidance will be vital in establishing the appropriate levels of disparity for the Ameritech products. KPMG Consulting could recommend levels for each metric, but such proposals would involve an extended analysis of Ohio, Indiana and Wisconsin data in advance of the test. Alternatively, it has been suggested previously that one level of disparity as a function of standard deviation should be employed for all tests. While this is convenient, the suggestion is unjustified.

Based on Master Test Plan and statistical methodology development cycles in Indiana, Ohio and Wisconsin, the time required to perform data analysis and the likelihood of debate regarding the appropriate levels of disparity, KPMG Consulting estimates that the process of developing the appropriate levels of disparity could extend the baseline project schedules from four to six months (since statistical methodology is a critical path item). Additional unforeseen delays during testing, due to inexperience with this methodology, are also possible.

Likewise, dual hypothesis testing will be subject to the same estimated four to six month schedule delays given the need to establish the levels of disparity for the second hypothesis.

The *OH/IN/WI Request* does not produce any significant improvement in the Evaluations.

The *OH/IN/WI Request* concludes that dual hypothesis testing is necessary, if recommendations for exchanging the hypotheses and equalizing the risk of Type I and Type II errors are not granted. As described previously, the concern regarding balancing Type I and II errors for disaggregated measures is based on a statistical interpretation with which KPMG Consulting does not agree and whose only redress was

deemed untenable for these Evaluations. Likewise, the exchange of hypotheses or use of dual hypotheses is both statistically unnecessary and burdensome in the specific instance of these OSS evaluations. However, the request for additional analysis and reporting of those analyses is well-grounded in certain instances.

To this end, the current version of Appendix C prescribes additional analysis and reporting when sample sizes are not met or when other inconsistencies in the data or test arise. This additional analysis and reporting was added to Appendix C during the Collaborative's development process to address specifically this request for such activity, when necessary.

In summary, the statistical approach described in the current version of Appendix C has evolved significantly as a result of KPMG Consulting's testing experiences and the multiple Collaborative sessions. Appendix C illustrates a statistical approach that is sufficiently robust to yield meaningful results without adding time and cost to the Ameritech OSS Evaluations in Indiana, Ohio and Wisconsin.